APPENDIX F

RECOMMENDED GROUPINGS OF PROJECTS

Appendix F - Recommended Groupings of Projects

Project ID	Group Category	Group ID	Location	Milepost	Project Description	Justification/Support	Cost Estimate
Signal System Improvements							
5	Electrical	E-1	Corridorwide	n/a	Increase distance to advance detection to meet spacing requirements for prevailing speeds to reduce acceleration needed to stop	Detector loops are too close to intersections for effective high speed braking and contributes to high frequency of rear-end collisions	$ 150,000
8	Electrical	E-1	John Tyler Dr. to Topanga Canyon Rd.	48.491 - 40.769	Install communication between signals and connect signals back to Caltrans TMC. Develop and implement timing plans.Outdated signal coordination plans need to be optimized with appropriate cycle lengths and time-based schedule for proper traveling speeds and to generate reasonable gaps for cross streets and driveways. Review and update timing settings including Max2 and Max3. Consider deployment of state-of-the-art adaptive timing system to develop optimized timing plans based upon real time traffic conditions. Insure that the adaptive system is compatible with a high volume arterial.	Traffic signals are not fully interconnected and do not communicate with a central master system. Technicans must travel to the field to make timing changes or research simple issues. The system does not provide timing plans for all frequently occurring situations, including summer and weekend plans	$ 2,800,000
63	Electrical	E-1	John Tyler Dr.	48.491	Modify signal to provide protected left-turn phase to turn onto John Tyler from PCH	Numerous left and u-turn collisions at this location, will provide safer way to turn left onto John Tyler	$ 40,000
64	Electrical	E-1	John Tyler Dr.	48.491	Eliminate conflict with turning vehicles through crosswalk	Signal phase currently conflicts with pedestrians crossing PCH, this project will eliminate the conflict and provide safer crossing opportunity	$ 10,000
83	Electrical	E-1	Webb Way	47.441	Install countdown pedestrian signals	Increases pedestrian safety in high pedestrian area along PCH	$ 5,000
84	Electrical	E-1	Webb Way	47.441	Modify signal phasing so vehicles turning through crosswalk do not conflict with pedestrians	Signal phase currently conflicts with pedestrians crossing PCH, this project will eliminate the conflict and provide safer crossing opportunity	$ 10,000
95	Electrical	E-1	Malibu Pier	46.535	Install pedestrian signal countdown heads	Increases pedestrian safety in high pedestrian area along PCH	$ 5,000
96	Electrical	E-1	Malibu Pier	46.535	Establish signal control for eastbound left turn	Currenlty conflict with pedestrians, driveway is not controlled where left-turn vehicles turn across sidewalk, this project will potentially reduce left turn collisions	$ 60,000
98	Electrical	E-1	Crosswalk between McDonald's and Busch Realty	45.841	Change the uncontrolled crosswalk with warning lights to a HAWK pedestrian signal with median refuge and potential curb extensions.	High pedestrian traffic zone,public comments are in support of this project, will provide increased pedestrian visibility and potentially reduce rear end collisions caused by stopping abruptly	$ 175,000
106	Electrical	E-1	Rambla Pacifico Rd.	44.171	Provide protected northbound left-turn phase from PCH into gas station	High number of collisions attempting to make left turns in this area, this project will provide safer way to access gas station traveling westbound	$ 30,000

Project ID	Group Category	Group ID	Location	Milepost	Project Description	Justification/Support	Cost Estimate
113	Electrical	E-1	Las Flores Canyon Rd.	44.151	Reconstruct signal to eliminate condition where signal poles are not exposed to traffic on roadway shoulder.	Very old existing signal with many design and operation deficiencies, also a very high collision location, especially for rear-end collisions northbound/westbound, this project will provide for improved signal operations and great potential for reduction in collisions	$ 60,000
114	Electrical	E-1	Las Flores Canyon Rd.	44.151	Relocate signal detection so that vehicles are less likely to run red lights	Detector loops too close to intersections for effective high travel speeds, this project will provide safer traffic operations	$ 50,000
115	Electrical	E-1	Las Flores Canyon Rd.	44.151	Provide protected left turn arrows from PCH	High number of left turn collisions reported at this intersection	$ 25,000
116	Electrical	E-1	Las Flores Canyon Rd.	44.151	Relocate crosswalk to eliminate pedestrian-vehicle conflict for Las Flores vehicles turning left onto PCH	Removes existing pedestrian-vehicle conflict while left-turning traffic is permitted, increases pedestrian safety in a very heavy pedestrian area along PCH	$ 30,000
119	Electrical	E-1	Moonshadow's Restaurant	43.096	Install overhead warning signs per Caltrans Standard ES7J 200 feet on each side prior to parking area and building with pedestrian crossing signs, consider experimental action-style pedestrian signs via Federal request to experiment	Frequency of collisions with pedestrians crossing PCH in this area along with motorists distracted looking for on-street parking, this project will increase pedestrian visibility for motorists and provide a designated location for pedestrians to cross PCH, Dept. of Beaches and Harbors supports this project	$ 100,000
121	Electrical	E-1	Big Rock Dr.	42.491	Install a vehicle head on the 1-A pole in the northeast corner of the intersection for WBT movements	Increases visibility of signal for motorists, high collision location	$ 3,000
126	Electrical	E-1	Big Rock Dr.	42.491	Install additional overhead warning sign per Caltrans Standard Plan ES7J westbound at approximately 400' prior to intersection, sign should read "Signal Ahead"	Existing "Signal Ahead" sign is far from intersection, this project will add a sign closer to the intersection to remind motorists of approaching signal after horizontal curve	$ 100,000
130	Electrical	E-1	Topanga Canyon Rd.	40.769	Upgrade signal system and conduct study to develop weekend timing plan that optimizes eastbound flow along PCH based upon summer and weekend traffic counts	Appears to cause severe back up into city on beach days due to pressures on signal timing	$ 50,000
						Group E-1 Total Cost	**$ 3,703,000**
Street Light Improvements and Traffic Signal Synchronization							
10	Electrical	E-2	Trancas Canyon Rd. to Paradise Cove Rd.	55.650 - 52.162	Provide interconnected signal system. Develop timing plans for weekday and weekend periods. Implement timing plans based on time of day or in response to frequently occurring traffic patterns. Relocate advance detection, where prevailing speeds are higher than current design provision.	Traffic signals are not fully interconnected and do not communicate with a central master system. Technicans must travel to the field to make timing changes or research simple issues. The system does not provide timing plans for all frequently occurring situations, including summer weekend plans	$ 2,250,000

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Project ID	Group Category	Group ID	Location	Milepost	Project Description	Justification/Support	Cost Estimate
17	Electrical	E-2	Encinal Canyon Rd.	59.401	Install street light at intersection	Heavy on-street parking with pedestrian activity in this area, this project will improve pedestrian visibility at night	$ 5,000
14	Electrical	E-2	El Pescador Beach Rd.	58.856	Provide street light at beach access	Heavy on-street parking in this area for beach access, this project will improve pedestrian visibility at night	$ 10,000
20	Electrical	E-2	El Matador Beach Rd.	58.848	Provide street light at beach access	Heavy on-street parking in this area for beach access, this project will improve pedestrian visibility at night	$ 10,000
24	Electrical	E-2	Lunita Rd.	57.391	Install street light at intersection	Heavy on-street parking with pedestrian activity in this area, this project will improve pedestrian visibility at night	$ 5,000
26	Electrical	E-2	Trancas Canyon Rd.	56.851	Modify signal phasing to allow left turns onto Trancas from PCH when crosswalk is active	Signal phase now conflicts with pedestrians crossing PCH, this project will eliminate the conflict and provide safer crossing opportunity	$ 20,000
31	Electrical	E-2	Guernsey Avenue	56.511	Provide street light at intersection	Heavy on-street parking with pedestrian activity in this beach access area, this project will improve pedestrian visibility at night	$ 9,000
38	Electrical	E-2	Heathercliff Rd.	54.341	Relocate crosswalk to other side of intersection and rephase signal for pedestrian movements	Removes existing pedestrian-vehicle conflict while left-turning traffic is permitted, increases pedestrian safety in a very heavy pedestrian area along PCH	$ 20,000
40	Electrical	E-2	Kanan Dume Rd.	54.020	Modify signal phasing at intersection to allow more time for the left-turn onto Kanan Dume Rd.	Long queues observed in left-turn lane as it can back up past next signal at Heathercliff and part way down to Zuma beach, this safety measure reduces spillback which can cause rear-end collisions	$ 2,000
43	Electrical	E-2	Zumirez Dr.	53.671	Restripe Zumirez signal to restore shoulder to inland side by narrowing travel lanes, removing the wide median nose stripe, maintain right turn lane	A slight reduction in lane width will provide a full shoulder that serves as a buffer for bicyclists and pedestrians in addition to safe refuge area for motorists, this provides improved consistency along the PCH corridor	$ 60,000
48	Electrical	E-2	Paradise Cove Rd.	52.162	Modify signal phasing to eliminate pedestrian-vehicle conflict for northbound vehicles turning left onto PCH	Signal phase now conflicts with pedestrians crossing PCH, this project will eliminate the conflict and provide safer crossing opportunity	$ 50,000
52	Electrical	E-2	Escondido Beach Road / Malibu Cove Colony Drive	51.801	Install street light at intersection on inland side	Increases pedestrian visibility at night as beach access is nearby	$ 8,000
53	Electrical	E-2	Escondido Beach Road / Malibu Cove Colony Drive	51.801	Install pedestrian crossing sign and flashers	Heavy on-street parking and beach activity at this intersection as well as bus stops, increases pedestrian visibility and awareness to motorists	$ 40,000

Project ID	Group Category	Group ID	Location	Milepost	Project Description	Justification/Support	Cost Estimate
54	Electrical	E-2	Latigo Canyon Drive	51.061	Provide street light at intersection	Increases pedestrian visibility at night as beach access is nearby	$ 8,000
56	Electrical	E-2	Latigo Shores Drive / Seagull Way	50.801	Provide street light at intersection	Increases pedestrian visibility at night as beach access is nearby	$ 8,000
						Group E-2 Total Cost	**$ 2,505,000**
Median Construction							
23	Median Construction	M-1	Broad Beach Rd. North to Trancas Canyon Rd.	58.461 - 56.851	Consider extruded concrete median where median is less than 10 feet wide	Existing striped median reduces to 4 to 6 feet which is already not wide enough for a vehicle, this project will reduce the number of collisions crossing the median	$ 1,600,000
41	Median Construction	M-1	Kanan Dume Rd. to Latigo Canyon Rd.	54.020 - 51.061	Install permanent raised median in the double-yellow areas, and where enough width exists, consider landscaped medians	Decreases opportunity for vehicles to cross median and cause severe collisions, forces pedestrians to cross at designated crosswalks in heavy pedestrian areas	$ 2,200,000
32	Median Construction	M-1	Zuma Beach area	55.612	Construct raised medians in areas where double-yellow lines exist in the vicinity of Zuma Beach, especially where yellow posts are currently installed	Vehicles currently make illegal u-turns and pedestrians cross PCH regularly, project will likely reduce collisions crossing the median and force pedestrians to cross at designated crosswalks, Department of Beaches and Harbors are in favor of this project approach	$ 920,000
46	Median Construction	M-1	Paradise Cove Rd.	52.162	Construct raised median within 500 feet of intersection in both directions wherever a double-double yellow line exists and extend left-turn lane by 100 feet	Decreases opportunity for vehicles to cross median and cause severe collisions, forces pedestrians to cross at designated crosswalks in heavy pedestrian areas	$ 300,000
50	Median Construction	M-1	470' west of Escondido Beach Road / Malibu Cove Colony Drive	51.890	Construct a permanent raised median in the double-yellow area before and after Geoffreys's for approximately 1800 feet.	Heavy parking on both side of street and pedestrians crossing PCH, vehicles make illegal u-turns, this will force pedestrians to cross at defined locations and potentially reduce rear end collisions due to abrupt stopping in area	$ 330,000
79	Median Construction	M-1	Webb Way	47.441	Increase the storage length of WBL turns from PCH into Webb Way by eight cars	Public comments have expressed the need for this project, will reduce queue overflow and spillback which may reduce rear-end collisions	$ 60,000
80	Median Construction	M-1	Webb Way	47.441	Increase the storage length of EBL turns from PCH into Webb Way by six cars	Public comments have expressed the need for this project, will reduce queue overflow and spillback which may reduce rear-end collisions	$ 60,000
77	Median Construction	M-1	Webb Way	47.441	Remove median curb obstruction to straighten crosswalk	Increases pedestrian safety by eliminating tripping hazard and expectency	$ 5,000
						Group M-1 Total Cost	$ 5,475,000

Project ID	Group Category	Group ID	Location	Milepost	Project Description	Justification/Support	Cost Estimate
91	Median Construction	M-2	Cross Creek Rd.	47.091	Increase the storage length of EBL turns from PCH into Cross Creek Road by 150' from 300' to 450'	Turning volume exceeds capacity of lane, existing queues spill back into through traffic lanes creating risk for rear-end collisions, this project will potentially reduce those collisions and queuing that blocks through traffic	$ 40,000
93	Median Construction	M-2	Serra Rd. to Malibu Pier	46.811	Construct continuous raised median and reduce median width to provide wider shoulders	Vehicles observed making illegal u-turns in this area, high frequency of collisions as well as parked vehicles, this project has potential to greatly reduce collisions and provide increased buffer for pedestrians and bicyclists	$ 420,000
118	Median Construction	M-2	Moonshadow's Restaurant	43.096	Construct a median in front of Moonshadow's. Provide left-turn lane at north end of parking area for entry to restaurant. Construct raised median refuge cut out in front of front door so that pedestrians can wait in median.	Frequency of collisions reported with pedestrians crossing PCH, this project will define area to make a left turn to decrease illegal u-turns, Dept. of Beaches and Harbors supports this project	$ 135,000
120	Median Construction	M-2	830' west of Big Rock Dr.	42.651	Construct a raised median in area where double-double yellow line exists at the end of the left-turn lane, provide landscaping pockets to obtain limited traffic calming effect from plantings	High frequency of collisions involving vehicles crossing over into oncoming traffic, this project decreases opportunity for vehicles to cross median and cause severe collisions	$ 500,000
124	Median Construction	M-2	Big Rock Dr.	42.491	Construct raised median east of the intersection for 150 feet	High frequency of collisions involving vehicles crossing over into oncoming traffic reported, paddle markers currently exist, public comments against paddle markers and the need for more permanent solution	$ 10,000
128	Median Construction	M-2	Pena Rd. Beach Turnout	41.805	Construct raised median for PCH with turn pocket into the north end of the turnout area. Median will prevent left turns into or from south end of the turnout area, so that traffic must turn right and make U-turns around the median area. Study area closely in upcoming parking study to maximize parking yield.	Many vehicles attempt to park in the informal turnout area and many collisions involving vehicles entering and leaving turnout area of beach access reported, this project will provide safer locations for motorists to turn from PCH, may reduce the need for on-street parking in this area	$ 120,000
						Group M-2 Total Cost	**$ 1,225,000**
Other Signing and Striping Improvements							
4	Sign & Striping	SS-1	Corridorwide	n/a	Replace blue side-street name signs that intersect PCH with larger letter, more visible signs. Also consider advance street name signs at prominent intersections.	Public comments have expressed concern about vehicles slowing down abruptly on PCH to locate streets, this project will better identify those streets, especially for those infrequent drivers who are unfamiliar with the area	$ 40,000

Appendix F - Recommended Groupings of Projects

Project ID	Group Category	Group ID	Location	Milepost	Project Description	Justification/Support	Cost Estimate
6	Sign & Striping	SS-1	Corridorwide	n/a	Upgrade stripe width to 6-inch standard bike lane stripe. Provide bike lane markings where parking is prohibited. An 8-inch stripe, as used for turn lane striping, may also be considered. Do not designate as bike lane unless parking prohibited or width allows room for bikes and parking.	Limited applications of wide edge lines have shown safety benefits for run off the road and impaired driver conditions	$ 200,000
7	Sign & Striping	SS-1	Corridorwide	n/a	In general, modify striping of right turn lanes on PCH and replace with a wider edge line and skip striping approaching intersections	Increases awareness of existing bike route and improves driver expectancy of bicyclists being present throughout PCH corridor	$ 100,000
11	Sign & Striping	SS-1	Corridorwide	n/a	Install post delineators on outside of curves north of John Tyler Drive where feasible, per Caltrans standard spacing guidelines, especially where adjacent land is undeveloped or installation of delineators is well suited.	Roadway is dark and difficult to follow the alignment at night for persons with low vision, delineators increase effectiveness of headlights at night without requiring new light fixtures.	$ 100,000
92	Sign & Striping	SS-1	Serra Rd. to Carbon Canyon Rd.	46.811 - 44.961	Narrow travel lanes and center turn lane slightly through central Malibu to provide wider shoulder.	Existing cross-section width of roadway is 80 feet or wider in this area experiencing high speeds and frequent collisions, if travel lanes are narrowed to 11 feet, this will provide a greater buffer for bikes and pedestrians, also has potential for motorists to drive slower	$ 300,000
127	Sign & Striping	SS-1	Big Rock Drive to Pena Road	42.491 - 41.805	Restripe to narrow median where k rail occupies shoulder in this area	Increases vehicle safety and potentially increase width of shoulder which would provide a buffer for bicyclists and parked vehicles	$ 90,000
18	Sign & Striping	SS-1	Encinal Canyon Rd.	59.401	Restripe westbound right-turn lane as a full shoulder with a dashed bike stripe	Reduces potential for right turn collision with bike and allows bike to legally stay in shoulder	$ 5,000
16	Sign & Striping	SS-1	La Piedra Beach Rd.	58.901	Consider restriping to widen shoulders by narrowing lanes to permit parking and provide buffer area.	Cars frequently park on shoulder with no buffer for pedestrians or bikes which presents major safety issues, Narrowing lanes to 11 eleven feet in this area will likely slow motorists and increase pedestrian safety	$ 5,000
15	Sign & Striping	SS-1	El Pescador Beach Rd.	58.856	Consider restriping to widen shoulders by narrowing lanes to permit parking and provide buffer area.	Cars frequently park on shoulder with no buffer for pedestrians or bikes which presents major safety issues, Narrowing lanes to 11 eleven feet in this area will likely slow motorists and increase pedestrian safety	$ 20,000
21	Sign & Striping	SS-1	El Matador Beach Rd.	58.848	Consider restriping to widen shoulders surrounding El Matador Beach area by narrowing lanes to permit parking and provide buffer area	Cars frequently park on shoulder with no buffer for pedestrians or bikes which presents major safety issues, Narrowing lanes to 11 eleven feet in this area will likely slow motorists and increase pedestrian safety	$ 5,000

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Project ID	Group Category	Group ID	Location	Milepost	Project Description	Justification/Support	Cost Estimate
37	Sign & Striping	SS-1	Heathercliff Rd.	54.341	Increase the storage length of WBL turns from PCH onto Heathercliff Road by 100' from 230' to 330'	Project extends WB LT lane to increase storage and reduce spillback for heavy left turning traffic, safety measure to reduce rear-end crashes, public has commented in support of this project	$ 5,000
44	Sign & Striping	SS-1	820' east of Zumirez Dr. (Pointe Malibu)	53.511	Restripe deceleration and acceleration lanes to full shoulders	Eliminates attempt for vehicles to merge and cross in front of cyclists, reducing opportunity for bike-vehicle collision, this provides improved consistency along the PCH corridor	$ 10,000
51	Sign & Striping	SS-1	Escondido Beach Road / Malibu Cove Colony Drive	51.801	Increase the storage length of WBL turns from PCH onto Malibu Cove Colony Drive by 100' from 110' to 210'	Project will increase storage and reduce spillback for heavy left turning traffic, safety measure to reduce rear-end crashes	$ 5,000
61	Sign & Striping	SS-1	Puerco Canyon Road	49.311	Restripe right-turn lane on inland side with a shoulder	Increases bicycle safety because it removes the crossing conflict with vehicles, improves driver expectancy throughout PCH corridor	$ 5,000
67	Sign & Striping	SS-1	John Tyler Dr.	48.491	Restripe to eliminate right turn from center lane. Double right turn through crosswalk is not justified by right turn volume	Current dual rights interfere with pedestrians crossing PCH	$ 10,000
68	Sign & Striping	SS-1	John Tyler Dr.	48.491	Restripe the acceleration lane on the inland side as a full shoulder	Current striping induces motorists to merge into heavy traffic and creates a merging conflict with bicyclists, this will reduce the opportunities for bike and sideswipe collisions	$ 10,000
73	Sign & Striping	SS-1	Malibu Canyon Rd.	48.171	Shorten right-turn lane approaching intersection based upon queueing needs	Current right-turn lane is approximately 500 feet, this project will allow shoulder and bike lane to extend to within approximately 200 feet of the intersection for safer travel along PCH	$ 3,000
69	Sign & Striping	SS-1	Malibu Canyon Rd.	48.171	Restore shoulder stripe west of the intersection.	Current striping induces motorists to merge into heavy traffic which may cause rear end collisions and also conflicts with bicyclists traveling along PCH	$ 10,000
76	Sign & Striping	SS-1	1700' west of Webb Way	47.763	Convert free right turn and merge lane from Civic Center Way approximately 1700' west of Webb Way into a yield to turn condition. Restripe shoulder to discourage motorists from merging into westbound traffic.	This project will provide safer vehicle movements and potential to decrease side-swipe collisions	$ 10,000
78	Sign & Striping	SS-1	Webb Way to 23634 PCH	47.441	Stripe a shoulder merge taper line for lane drop, allow parking in this area	Increases vehicle and bicyclist safety by defining travel lanes and creates designated parking on PCH	$ 10,000
85	Sign & Striping	SS-1	Webb Way	47.441	Restripe to change acceleration lane to a standard shoulder to discourage merging	Current striping induces motorists to merge into heavy traffic and creates a merging conflict with bicyclists, this will reduce the opportunities for bike and sideswipe collisions	$ 5,000

Project ID	Group Category	Group ID	Location	Milepost	Project Description	Justification/Support	Cost Estimate
82	Signage (Transit)	SS-1	Webb Way	47.441	Relocate bus stop nearer to traffic signal	Reduces distance for pedestrians to walk along PCH	$ 5,000
90	Sign & Striping	SS-1	Cross Creek Rd.	47.091	Restripe intersection to provide westbound right turn lane and move shoulder line over west of the intersection	Vehicles queue in through lane behind right turn vehicles waiting for pedestrians, vehicles also queue to enter service station driveway, this project would separate right turning traffic from through traffic and potentially reduce rear-end collisions	$ 80,000
101	Sign & Striping	SS-1	Carbon Canyon Rd.	44.961	Restripe right-turn lane on inland side with a shoulder stripe dashed approaching intersection.	Increases bicycle safety because it removes the crossing conflict with vehicles, improves driver expectancy throughout PCH corridor	$ 3,000
103	Sign & Striping	SS-1	Rambla Vista West	44.841	Replace short right-turn lane on inland side with a dashed striped shoulder	Increases bicycle safety because it removes the crossing conflict with vehicles, improves driver expectancy throughout PCH corridor	$ 3,000
123	Sign & Striping	SS-1	Big Rock Dr.	42.491	Increase the length of the eastbound left-turn lane on PCH to 200 feet with a 90 feet transition by striping change	High frequency of left-turn collisions reported in past, this project will reduce the spillback into the through travel lane	$ 10,000
129	Sign & Striping	SS-1	Topanga Canyon Rd.	40.769	Lengthen eastbound left turn storage bay to reduce potential overflow into through lane. (should be increased from 300' to 350', as the 95th queue distance is 350' for the weekend). Also lengthen time available to service lane during weekend.	Downstream end of major summer weekend traffic jam on PCH southbound that extends back to Central Malibu. Site is believed to be constrained by queueing out of PCH southbound left-turn lane that blocks number one through lane	$ 10,000
						Group SS-1 Total Cost	**$ 1,059,000**
Sidewalk-Related Improvements							
28	Sidewalk	SW-1	Trancas Canyon Rd.	56.851	Construct ADA compliant sidewalk and ramps on the inland side for the length of the shopping center and reconstruct inland side driveway to provide appropriate deceleration area	Poor access to nearby bus stops presents pedestrian safety issues	$ 60,000
42	Sidewalk (Transit)	SW-1	300' east of Kanan Dume Rd.	54.000	Move existing bus stop to Kanan Dume Rd. intersection and provide sidewalk and ADA ramps to accommodate pedestrians	Increases pedestrian safety by not forcing pedestrians to walk along PCH for an extended length	$ 60,000
59	Sidewalk	SW-1	Corral Canyon Rd. to Beach Access	49.961	Construct complete pedestrian walkway on ocean side from Corral Canyon Rd. signal to beach property	Heavy pedestrian traffic in this area, public comments have expressed the need for an improved pedestrian route to beach access, will provide buffer for pedestrians	$ 130,000
62	Sidewalk	SW-1	John Tyler Dr.	48.491	Remove obstruction (median curb) in crosswalk for both the east and west legs	Increases pedestrian safety by eliminating tripping hazard	$ 5,000
65	Sidewalk	SW-1	John Tyler Dr.	48.491	Construct ADA sidewalk to connect west side crosswalk to bus pad on both sides of PCH	Increases pedestrian safety to access bus stops	$ 60,000
70	Sidewalk	SW-1	Malibu Canyon Rd.	48.171	Reconstruct crosswalk ramps to ADA standards at westbound inland corner	Increases pedestrian safety to cross PCH	$ 20,000

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72	Sidewalk	SW-1	Malibu Canyon Rd.	48.171	Provide ADA access from intersection to City Park	Increases pedestrian safety to access public park	$ 20,000
71	Signage (Transit)	SW-1	Malibu Canyon Rd.	48.171	Install bus stop on PCH	Provides local access to bus instead of forcing pedestrians to walk along PCH to a bus stop further away	$ 20,000
81	Sidewalk	SW-1	Webb Way	47.441	Reconstruct crosswalk ramps to ADA standards	Increases pedestrian safety to cross PCH	$ 30,000
89	Sidewalk	SW-1	Cross Creek Rd.	47.091	Reconstruct crosswalk ramps to ADA standards	Increases pedestrian safety for those crossing PCH	$ 40,000
94	Sidewalk (Transit)	SW-1	Malibu Pier	46.535	Reconstruct crosswalk ramps to ADA standards, consider relocating bus stop on ocean side to Pier signal	Increases pedestrian safety for those crossing PCH, reduces length oftravel along PCH for pedestrians if bus stop is moved closer to signal	$ 60,000
97	Sidewalk	SW-1	22730 PCH (McDonald's ped crossing)	46.091	Increase width of ADA ramps on both sides as they are quite narrow, this may mean moving the crosswalk to the east by 1' or 2'	Increases pedestrian safety for those crossing PCH	$ 10,000
100	Sidewalk	SW-1	22333 PCH (Busch Realty ped crossing)	45.571	Move obstructing signal controller to improved location (it's in the middle of the sidewalk, with a less than 5' ADA approved clearance on either side)	Increases pedestrian safety along PCH corridor	$ 50,000
112	Sidewalk	SW-1	Las Flores Canyon Rd.	44.151	Provide ADA compliant improvements where feasible, including wheelchair ramps and raised curb returns	Improves pedestrian safety at intersection	$ 60,000
						Group SW-1 Total Cost	**$ 625,000**
Special Projects							
9	Special Project	SP-1	Webb Way to Las Flores Canyon Rd.	47-441 - 44.151	Evaluate vehicle speeds to determine if lower speed limit is warranted	Past speed surveys for this area indicate a lower speed limit may be warranted, strong public interest for motorists to slow down through this area, slower speeds reduce the severity of collisions, engineering and traffic survey does not appear to take speed samples especially between pier and Carbon Canyon where observed speeds are slower	$ 10,000
122	Special Project	SP-2	Big Rock Dr.	42.491	Monitor new protected/permissive left turn from PCH for effectiveness	High frequency of left turn collisions reported in past, may further decrease collisions if protected only	$ 3,000
99	Special Project	SP-3	2000' west of Carbon Canyon Road	44.582	Consider an installation of a crosswalk and appropriate warning or crossing treatment at this location	Popular beach entrance, many people park on inland side and cross road at undesignated areas, potentiall reduce rear end collisions caused by stopping abruptly for pedestrians	$ 10,000
27	Special Project	SP-4	Trancas Canyon Rd.	56.851	Construct westbound right-turn lane and bike channel onto Trancas Canyon Rd., consider installation of right turn arrow for heavy movement	Heavy right-turn demand exists at this intersection, this project provides deceleration lane for right turning vehicles to separate from through traffic in high speed zone, may decrease rear-end collisions	$ 100,000

Project ID	Group Category	Group ID	Location	Milepost	Project Description	Justification/Support	Cost Estimate
29	Special Project	SP-5	Trancas Canyon Rd.	56.851	Reconstruct driveway to provide appropriate deceleration area	This project will provide separate right turning vehicles from through traffic in high speed zone, may decrease rear-end collisions	$ 30,000
3	Special Project	SP-6	Corridorwide	n/a	Create bicycle hotline to report roadway deficiencies	Public comments have expressed concern with current physical conditions along PCH's travel lane edge and shoulders, existing bike route has several deficiencies	$ 50,000
1	Special Project	SP-7	Corridorwide	n/a	Increase law enforcement efforts for vehicles traveling over speed limit	High travel speeds have been observed in field, public comments to see more enforcement along the corridor	$ 100,000
						Group SP Total Cost	**$ 303,000**
Feasibility Studies							
12	Feasibility Study	FS-1	Decker Canyon Rd.	59.901	Evaluate intersection modification to a one- or two-lane roundabout. A one-lane roundabout could possibly provide space for additional parking.	A roundabout will likely slow motorists and increase visibility for pedestrians, a pedestrian fatality was reported at this location	$ 20,000
13	Feasibility Study	FS-1	Decker Canyon Rd.	59.901	Widen shoulder to provide striping for dashed bike lane and right turn lane from PCH onto Decker Canyon Rd.	Reduces potential for right turn vehicle to cut off bicycle, Design/Construction cost estimate $50,000	$ 5,000
						Group FS-1 Total Cost	**$ 25,000**
109	Feasibility Study	FS-2	Las Flores Canyon Rd. to Rambla Pacifico Rd.	44.151 - 44.171	Study to realign across intersections to eliminate broken back striping due to change in median and shoulder widths	Current roadway curvature causes difficulty for motorists to stay in proper lane, change in curve radius will increase driver expectancy along corridor and potentially reduce multiple types of collisions, Design/Construction cost estimate TBD	$ 10,000
110	Feasibility Study	FS-2	Las Flores Canyon Rd. to Rambla Pacifico Rd.	44.151 - 44.171	Widen bridge over Las Flores Creek to provide sidewalk on ocean side from Rambla Pacifico intersection to Dukes entrance. Maintain sufficient shoulder for bicycling, but utilize surplus area to move signal poles behind curb.	This project allows improvement in alignment and better use of shoulders, potentially reduces collisions with fixed objects, Design/Construction cost estimate TBD	$ 10,000
111	Feasibility Study	FS-2	Las Flores Canyon Rd. to Rambla Pacifico Rd.	44.151 - 44.171	Consider narrowing openings for Las Flores and Rambla Pacifico approaches.	Existing wide openings on side-street approaches should be better defined, Design/Construction cost estimate TBD	$ 5,000
107	Feasibility Study	FS-2	Rambla Pacifico Rd.	44.171	Realign Rambla Pacifico to narrow and improve channelization at PCH and increase separation from antique bridge rail. Increase left-turn lane storage for short turn pockets	This project addesses major ADA issues at intersection and shortens crosswalk to reduce time for pedestrians needing to cross PCH, will potentially reduce rear end collisions if increased LT storage is provided, Design/Construction cost estimate TBD	$ 10,000

Project ID	Group Category	Group ID	Location	Milepost	Project Description	Justification/Support	Cost Estimate
107	Feasibility Study	FS-2	Rambla Pacifico Rd.	44.171	Realign Rambla Pacifico to narrow and improve channelization at PCH and increase separation from antique bridge rail. Increase left-turn lane storage for short turn pockets	This project addesses major ADA issues at intersection and shortens crosswalk to reduce time for pedestrians needing to cross PCH, will potentially reduce rear end collisions if increased LT storage is provided, Design/Construction cost estimate TBD	$ 20,000
117	Feasibility Study	FS-2	Las Flores Canyon Rd.	44.151	Consider widening the shoulder if any surplus width is available in travel lanes or median.	Inland parking is very heavy in the narrow spot prior to the widening that is located just before Las Flores, this project will provide a buffer for parked vehicles and pedestrians, Design/Construction cost estimate $50,000	$ 10,000
						Group FS-2 Total Cost	**$ 65,000**
88	Feasibility Study	FS-3	Malibu Rd. to Cross Creek Rd.	47.241 - 47.091	Build sidewalk behind trees on ocean side from Cross Creek Rd. to Malibu Rd.	Many people walk along PCH in this area, this project would provide a safety buffer and more scenic walking experience, Design/Construction cost estimate $150,000	$ 20,000
39	Feasibility Study	FS-3	Heathercliff Rd.	54.341	Widen right turn lane to allow dashed bike stripe	Public comments have expressed support of marking bike lanes along route, this project increases consistency and awareness of bike route along PCH corridor, Design/Construction cost estimate $100,000	$ 6,000
86	Feasibility Study	FS-3	Webb Way at Civic Center Way	47.441	Consider roundabout at this intersection. A single-lane roundabout would suffice	Existing traffic queues onto PCH, especially during PM peak periods, this project would create a yield treatment instead of a stop condition that would most likely decrease the delay time for vehicles, Design/Construction cost estimate $200,000	$ 15,000
102	Feasibility Study	FS-3	Carbon Canyon Rd. to Rambla Pacifico	44.961 - 44.171	Study feasibility to build a complete sidewalk from Carbon Canyon Rd. to Rambla Pacifico on the inland side	Increases pedestrian safety along PCH corridor, many segments exist in this section and others can be built without interferring too much with private development, Design/Construction cost estimate $410,000	$ 20,000
104	Feasibility Study	FS-3	La Costa Beach Club (21440 PCH)	44.461	Study feasibility of narrowing the striping in the vicinity of La Costa beach club to widen the shoulders. Consider a raised median area with refuge for the crosswalk and curb extensions in conjuction with potential signalization of the La Costa crosswalk that is planned by the City of Malibu.	Public comments highly support this project, this project will increase buffer for bicyclists, parked cars, and pedestrians in this highly congested area, has potential to reduce vehicles crossing into oncoming traffic causing collision, making illegal u-turns and causing rear end collisions, Design/Construction cost estimate $600,000	$ 15,000

Project ID	Group Category	Group ID	Location	Milepost	Project Description	Justification/Support	Cost Estimate
125	Feasibility Study	FS-3	Big Rock Dr.	42.491	Construct a curb return with ADA ramp so that the traffic poles can be located behind it, narrow the opening and tighten up the radius so the curb return is on top of the existing pavement	This project will potentially reduce collisions with fixed objects and increase pedestrian safety in crossing PCH at this location, Design/Construction cost estimate $100,000	$ 10,000
						Group FS-3 Total Cost	**$ 86,000**
25	Feasibility Study	FS-4	Lunita Rd.	57.391	Widen shoulder to provide striping for dashed bike lane and right turn lane from PCH onto Lunita Rd.	Public comments express concern to add a right turn lane at this intersection, collision reported with bicycle and right turning vehicle, this project provides deceleration lane for right turning vehicles to separate from through traffic in high speed zone, Design/Construction cost estimate $50,000	$ 7,000
30	Feasibility Study	FS-4	Trancas Canyon Rd.	56.851	Provide a sidewalk from shopping center and construct new pedestrian underpass crossing to beach	Many pedestrians currently walk from Trancas Canyon Rd signal to Zuma Beach along ocean side along shoulder which presents a safety issue, this project will provide separation from vehicles and ADA-compliant access to beach area, Design/Construction cost estimate TBD	$ 30,000
33	Feasibility Study, Signage	FS-4	Morning View Dr.	55.650	Extend right turn lane from PCH onto Morning View Dr., consider installing a right turn arrow for this heavy movement	A right turn lane was recently added to the intersection, however the right turning vehicles still create a queue that is longer than the lane and blocks the through traffic, especially during school hours, public is supportive of project, Design/Construction cost estimate $200,000	$ 10,000
58	Feasibility Study	FS-4	Corral Canyon Rd. to Puerco Canyon Rd.	50.391 - 49.311	Widen shoulder on inland side where parking occupies the entire shoulder. Reconstruct the median to provide full height curb. Opportunity to narrow median and increase shoulder width is possible.	Many of the existing medians in the area have almost zero height curb because of numerous overlays, this project will reduce the opportunity for vehicles to cross into oncoming traffic, recent fatality in this section of PCH, Design/Construction cost estimate $1,300,000	$ 10,000
						Group FS-4 Total Cost	**$ 57,000**
34	Feasibility Study	FS-5	Busch Dr.	55.041	Construct fourth leg of intersection to provide direct access to Zuma Beach and connection across creek to Westward Beach Rd. Permits elimination of existing westbound left-turn lane from PCH to Westward Beach and allows restoration of shoulder on inland side of PCH near Bonsall Dr.	Relieve congestion on PCH in high collision area, especially when heavy beach demand exists, improved exit for Zuma Beach, improved exit for Westward Beach. Restores inland shoulder, may require some adjustments to Zuma Beach parking lot, Design/Construction cost estimate $ 2,000,000	$ 20,000

Project ID	Group Category	Group ID	Location	Milepost	Project Description	Justification/Support	Cost Estimate
36	Feasibility Study	FS-5	Bonsall Dr.	54.911	If shifting alignment is not possible, convert intersection approach to a right-in, right-out only and trim back vegetation to improve motorists sight distance towards the south. Restripe PCH to restore inland shoulder	Low cost alternative to other measures at this site. Others provide greater benefits, but may not be feasible to due environmental impacts, Design/Construction cost estimate $20,000	$ 5,000
35	Feasibility Study	FS-5	610' east ofWestward Beach Rd./Bonsall Dr.	54.791	Shift roadway alignment and construct shoulder on inland side from 610' east of Westward Beach to Zuma Beach access overpass by eliminating the center turning lanes	No shoulder currently exists on inland side, forcing bicyclists into travel lane approaching bottom of hill, project eliminates confusing left-turn striping for motorists and may reduce high frequency of collisions, Design/Construction cost estimate TBD	$ 20,000
						Group FS-5 Total Cost	**$ 45,000**
45	Feasibility Study	FS-6	330' west of Paradise Cove Rd.	52.222	Relocate bus stop to intersection of Paradise Cove Rd.	Increases pedestrian safety by not forcing pedestrians to walk along PCH for an extended length, increases visibility of pedestrians to motorists	$ 20,000
47	Feasibility Study	FS-6	Paradise Cove Rd.	52.162	Widen shoulder on inland side to 12 feet within 500 feet of intersection in both directions, construct 5 foot wide sidewalk behind seven foot shoulder at intersection	Extremely heavy on-street parking and pedestrian area, pedestrians currently have no buffer between parked vehicles and PCH traffic, Design/Construction cost estimate $750,000	$ 20,000
49	Feasibility Study	FS-6	Paradise Cove Rd.	52.162	Widen shoulder to provide striping for dashed bike lane and right turn lane from PCH onto Paradise Cove Rd.	this project provides deceleration lane for right turning vehicles to separate from through traffic in high speed zone, also increases awareness of bicyclists along PCH corridor, Design/Construction cost estimate $100,000	$ 7,000
55	Feasibility Study	FS-6	Latigo Canyon Drive	51.061	Widen shoulder to provide striping for dashed bike lane and right turn lane from PCH onto Latigo Canyon Dr.	Public comments express concern to add a right turn lane at this intersection, this project provides deceleration lane for right turning vehicles to separate from through traffic in high speed zone, Design/Construction cost estimate $100,000	$ 6,000
57	Feasibility Study	FS-6	Latigo Shores Drive / Seagull Way	50.801	Widen shoulder to provide striping for dashed bike lane and right turn lane from PCH onto Latigo Shores Dr.	Public comments express concern to add a right turn lane at this intersection, collision reported with bicycle and right turning vehicle, this project provides deceleration lane for right turning vehicles to separate from through traffic in high speed zone, Design/Construction cost estimate $50,000	$ 4,000
						Group FS-6 Total Cost	**$ 57,000**

Appendix F - Recommended Groupings of Projects

Project ID	Group Category	Group ID	Location	Milepost	Project Description	Justification/Support	Cost Estimate
60	Feasibility Study	FS-7	Malibu Seafood	49.961	Construct a new pedestrian underpass crossing in the close vicinity of Malibu Seafood	Many pedestrians currently cross PCH in this areato access the beach which presents an extremely dangerous condition, this project will provide separation from vehicles and ADA-compliant access to beach area, Design/Construction cost estimate $700,000	$ 25,000
66	Feasibility Study	FS-7	John Tyler Dr.	48.491	Widen right turn lane to allow dashed bike stripe	Public comments have expressed support of marking bike lanes along route, this project increases consistency and awareness of bike route along PCH corridor, Design/Construction cost estimate $100,000	$ 7,000
74	Feasibility Study	FS-7	Malibu Canyon Rd.	48.171	Widen right turn lane to provide channel for through bikes	Safer intersection treatment will reduce heavy right turn volume conflicting with bicycles traveling along PCH, Design/Construction cost estimate $120,000	$ 7,000
75	Feasibility Study	FS-7	Malibu Canyon Rd.	48.171	Widen shoulder to provide striping for dashed bike lane and right turn lane from PCH onto Winter Mesa Dr.	Public comments express concern to add a right turn lane at this intersection, this project provides deceleration lane for right turning vehicles to separate from through traffic in high speed zone, Design/Construction cost estimate $120,000	$ 4,000
						Group FS-7 Total Cost	**$ 43,000**
105	Feasibility Study	FS-8	Rambla Vista East to Rambla Pacifico Road	44.261 - 44.171	Study feasibility of narrowing shoulder in front of Rambla Pacifico shopping center to increase area for parking along frontage road. This project should be included in the imminent parking study.	Sight distance exiting parking is limited by retaining wall and passengers cannot open doors, this project improves the buffer between traveling vehicles and pedestrians on sidewalk, allows for increased parking area, Design/Construction cost estimate $500,000	$ 5,000
108	Feasibility Study	FS-8	Las Flores Canyon Rd. to Rambla Pacifico Rd.	44.151 - 44.171	Study feasibility to construct bridge connecting Rambla Pacifico to Las Flores Canyon Rd. north of PCH to eliminate the need for the Rambla Pacifico traffic signal	Existing two signalized intersections within very close distance of each other, high collision segment, this project has high potential to reduce motorist confusion and rear end collisions, Design/Construction cost estimate TBD	$ 20,000
						Group FS-8 Total Cost	**$ 25,000**

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Project ID	Group Category	Group ID	Location	Milepost	Project Description	Justification/Support	Cost Estimate
19	Feasibility Study	FS-9	Encinal Canyon Rd.	59.401	Consider realignment of Encinal Canyon Road to intersect with La Piedra Beach Rd. Also consider roundabout control for new aligned intersection	Two intersections within close distance of each other, a more traditional four-leg intersection may be safer, however, may not be feasible with existing terrain and will require further study, Design/Construction cost estimate $500,000	$ 10,000
22	Feasibility Study	FS-9	El Matador Beach	58.848	Consider possibility to enlarge parking lot	Enlarging parking lot may reduce need for on-street parking and pedestrians walking along and crossing PCH, Design/Construction cost estimate $150,000	$ 10,000
						Group FS-9 Total Cost	**$ 20,000**
2	Feasibility Study	FS-10	Corridorwide	n/a	Detailed evaluation of beach parking areas to determine if additional off-street parking can be achieved	High beach parking demand along the PCH corridor creates pedestrian crossing safety issues, pedestrian fatalities have been reported in these areas, Design/Construction cost estimate TBD	$ 150,000
						Group FS-10 Total Cost	**$ 150,000**